Updated: April 1, 2017

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EMPLOYMENT

2012 – present Assistant Professor of Public Policy and Economics
Batten School of Leadership and Public Policy, University of Virginia

1/2017 – present Senior Social Scientist, The Lab @ DC
Executive Office of the Mayor, Washington, DC

9/2015 – 8/2016 Visiting Fellow, Economic Studies and The Hamilton Project
The Brookings Institution

AFFILIATIONS

2016 – present Nonresident Fellow, Economic Studies, The Brookings Institution
2016 – present Affiliate, University of Chicago Crime Lab

EDUCATION

Ph.D. in Economics, Stanford University, June 2012
Dissertation committee: Caroline M. Hoxby, Ran Abramitzky, B. Douglas Bernheim
B.A. in Economics and Mathematics, Williams College, 1999-2003 (Highest Honors)

RESEARCH FIELDS

Primary field: Applied Microeconomics (Public Finance and Labor Economics)
Secondary fields: Law and Economics, Economics of Crime, Discrimination, Experimental Economics

ARTICLES IN REFEREED JOURNALS

The Effects of DNA Databases on Crime. 2017. *American Economic Journal: Applied Economics*, 9(1), 165-201.

Abstract: Every U.S. state has a database of criminal offenders' DNA profiles. These databases receive widespread attention in the media and popular culture, but there has been no rigorous analysis of their impact on crime. This paper intends to fill that gap. I exploit the details and timing of state DNA database expansions in two ways, first to address the effects of DNA profiling on individuals' subsequent criminal behavior and then to address the aggregate effects on crime rates. I show that DNA databases deter crime by profiled offenders, reduce crime rates, and are more cost-effective than traditional law enforcement tools.

Media coverage includes: UVA Today, NBC 29, The Daily Beast, Futurity.org, BBC, Police Professional (subscription only), WMRA's Virginia Insight (radio interview), Maryland v. King Supreme Court briefs (Petitioner and LA County amicus), NY Times

Under the Cover of Darkness: How Ambient Light Influences Criminal Behavior (with Nicholas J. Sanders). 2015. *Review of Economics and Statistics*, 97(5), 1093-1103.

Abstract: We exploit Daylight Saving Time (DST) as an exogenous shock to daylight, using both the discontinuous nature of the policy and the 2007 extension of DST, to consider how light impacts criminal activity. Regression discontinuity estimates show a 7% decrease in robberies following the shift to DST. As expected, effects are largest during the hours directly affected by the shift in daylight. We discuss our findings within the context of criminal decision-making and labor supply, and estimate that the 2007 DST extension resulted in $59 million in annual social cost savings from avoided robberies.

Media coverage includes: Next City, NPR Morning Edition, Vox, National Geographic, Washington Post, CNN, Washington Examiner, Mother Jones, Popular Mechanics, Gizmodo, Christian Science Monitor, BBC, Significance Magazine

The Visible Hand: Race and Online Market Outcomes (with Luke Stein). 2013. *Economic Journal,* 123(572), F469-F492.

Abstract: We examine the effect of race on market outcomes by selling iPods through local online classified advertisements throughout the US. Each advertisement features a photograph including a dark or light-skinned hand, or one with a wrist tattoo. Black sellers receive fewer and lower offers than white sellers, and the correspondence with black sellers indicates lower levels of trust. Black sellers' outcomes are particularly poor in thin markets (suggesting that discrimination may not 'survive' competition among buyers) and those with the most racial isolation and property crime (consistent with channels through which statistical discrimination might operate).

Media coverage includes: NY Times Freakonomics blog, AOL News, Huffington Post, Stanford Report, Wall Street Journal Real Time Economics blog, USA Today, Financial Times, The Young Turks podcast, Crosscurrents (KALW), Daily Mail, UVA Today, The Root, NY Times

OTHER PUBLICATIONS

Moving to job opportunities? The effect of 'Ban the Box' on the composition of cities (with Benjamin Hansen). *American Economic Review (P&P)*, forthcoming.

Abstract: Jurisdictions across the United States have adopted "ban the box" (BTB) policies preventing employers from conducting criminal background checks until late in the job application process. Their primary goal is to increase employment for those with criminal records. If individuals with criminal records view these policies as improving their labor market opportunities, they might move to BTB-adopting places in search of employment. In this paper, we consider BTB's effects on the demographic composition of labor markets and the likelihood that residents report recently moving from other labor markets. We find no evidence that BTB affects migration.

Increasing employment for individuals with criminal records, The Hamilton Project, October 2016.

Abstract: Workers with criminal records, in particular black and Hispanic males with criminal records, face many labor market challenges—over and above the challenges faced by the larger population of low-skilled workers. Finding ways to improve employment outcomes for individuals with criminal records is an urgent priority with

implications for public safety, the economy, and families of those with records. New evidence documenting unintended negative consequences of one recent attempt to address this concern—Ban the Box laws that delay employer access to information about applicants—should be considered as the policy discussion moves forward. As policymakers continue efforts to address employment among workers with criminal records, it is imperative that they begin with an understanding of how employers interact with job applicants who have criminal records. Accordingly, a multi-pronged approach—inclusive of effective policies aimed at building workers' skills, communicating their work-readiness to employers, and promoting robust labor markets for low-skilled workers—is necessary for improving employment outcomes for workers with criminal records.

The geography, incidence, and underreporting of gun violence: new evidence using ShotSpotter data (with Jillian Carr). Brookings Research Paper, April 2016.

Abstract: Criminal activity is often selectively underreported, which can make it difficult to understand public safety problems and devise effective policy strategies to address them. However, new surveillance technologies are facilitating the collection of more accurate data on crime. In this paper, we describe data on gunfire incidents, recorded using a tool called ShotSpotter. We also compare those data with previously-available data on reported crime and 911 calls to estimate baseline correlations between these measures as well as the causal effects of gunfire incidents on reporting. This provides evidence on the extent of underreporting of gun violence. Finally, we use these data to replicate and extend Levitt (1998), strengthening his evidence that police hiring increases the reporting of serious crimes. The characteristics and research potential of these data are relevant to surveillance data more broadly; while such data have not yet been exploited by social scientists, they could be extremely valuable for crime research.

Media coverage includes: UVA Today, NewsRadio WINA, Daily Mail, Washington Post, Vox, Wisconsin Public Radio, Forbes

WORKING PAPERS

The moral hazard of lifesaving innovations: Naloxone, opioid abuse, and crime (with Anita Mukherjee)

First draft: March 2017.

Abstract: States across the country have responded to the opioid epidemic by increasing access to Naloxone, a drug that can help save lives when administered during an overdose. However, Naloxone access may unintendedly increase opioid abuse because the catastrophic risk of death might have previously deterred risk-averse individuals from these substances. Using jurisdiction level panel data on crime and a difference-in-differences framework exploiting Naloxone access laws, we estimate that broadening Naloxone access increases opioid-related crimes by 50%. These effects come mostly from heroin and a category that includes prescription opioids. These crimes are also more likely to coincide with theft, assault, and robbery offenses, suggesting that drug users are engaging in other types of crime to fund their addiction or as a byproduct of addiction. We also show that Naloxone access may encourage substitution from crack and cocaine to opioids, and investigate changes in offender demographics and crime location. We find no statistically significant effect of expanded Naloxone access on placebo categories of crime including murder and marijuana-related offenses.

Does "ban the box" help or hurt low-skilled workers? Statistical discrimination and employment outcomes when criminal histories are hidden (with Benjamin Hansen). NBER Working Paper No. 22469.

First draft: May 2016. Current draft: January 2017.

Abstract: Jurisdictions across the United States have adopted "ban the box" (BTB) policies preventing employers from conducting criminal background checks until late in the job application process. Their goal is to improve employment outcomes for those with criminal records, with a secondary goal of reducing racial disparities in employment. However, removing information about job applicants' criminal histories could lead employers who don't want to hire ex-offenders to guess who the ex-offenders are, and avoid interviewing them. In particular,

employers might avoid interviewing young, low-skilled, black and Hispanic men when criminal records are not observable, guessing that these applicants are more likely to be ex-offenders. This would exacerbate racial disparities in employment. In this paper, we use variation in the details and timing of state and local BTB policies to test BTB's effects on employment for various demographic groups. We find that BTB policies decrease the probability of being employed by 3.4 percentage points (5.1%) for young, low-skilled black men, and by 2.3 percentage points (2.9%) for young, low-skilled Hispanic men. These findings support the hypothesis that when an applicant's criminal history is unavailable, employers statistically discriminate against demographic groups that include more ex-offenders.

Media coverage includes: Milwaukee Journal-Sentinel, Overlawyered, Vox (here and here), Charlotte Observer, Weekly Standard, Richmond Times-Dispatch, Houston Chronicle, Pacific Standard, Fusion, The Atlantic, Michigan radio's State of Opportunity, The Economist, NBC 29, UVA Today, Human Resource Executive Online, The Guardian, Washington Post, Wall Street Journal, Governing, Washington Times, National Review, American Prospect, Triple Pundit

How do state crime policies affect other states? The externalities of state DNA database laws

First draft: April 2016. Current draft: December 2016.

Abstract: State and local governments control most criminal justice policy in the United States, without regard for potential effects on other states. Lenient state policies might draw in criminals from other states, whereas harsh state policies might drive criminals away to other states. Alternatively, harsh policies might deter or incapacitate criminals who would otherwise migrate to neighboring states and commit crimes there. Thus the effects of a state's policies extend beyond its borders, but these effects could be positive or negative. This paper estimates the externalities of DNA databases. I exploit variation in the timing of database expansions as exogenous shocks to the sizes of state databases, to measure the cross-state effect of database size. The federal government seems to think externalities are positive, since it subsidizes state-level database expansions. I find instead that externalities are negative: increasing the number of other-state profiles increases own-state crime, so that approximately 10 percent of DNA databases' crime-reducing effect is due to states' displacing crime to other states. Effects are larger for nearby states. This result is consistent with the hypothesis that offenders respond rationally to state policies by moving to places where they are less likely to get caught for their crimes.

The effects of DNA databases on the deterrence and detection of offenders (with Rasmus Landersø and Anne Sofie Tegner Anker)

First draft: March 2016. Current draft: April 2017.

Abstract: Countries around the world use databases of criminal offenders' DNA profiles to match known offenders with crime scene evidence. The purpose is to ease police detection work and to increase the probability that offenders get caught if they reoffend, thereby deterring future criminal activity. However, relatively little is known about the behavioral effects of this law enforcement tool. We exploit a large expansion of Denmark's DNA database in 2005 to measure the effect of DNA profiling on criminal behavior. Individuals charged after the expansion were much more likely to be added to the DNA database than similar offenders charged just before that date. Using a regression discontinuity strategy, we find that the average effect of the DNA database is a reduction in recidivism. By using the rich Danish register data, we further show that effects are heterogeneous across observable offender characteristics; it is mainly offenders initially charged with violent crime that are deterred from committing new crimes. We also find that DNA profiling has a positive detection effect, increasing the probability that repeat offenders get caught. Finally, we find evidence that DNA profiling changes non-criminal behavior: offenders added to the DNA database are more likely to get or remain married. This is consistent with the hypothesis that, by deterring future criminal behavior, DNA profiling changes an offender's life course for the better.

A Promising Alternative: How Making College Free Affects Teens' Risky Behaviors (with Chloe Gibbs).

First draft: November 2014. Current draft: May 2016.

Abstract: Promise-type college scholarships first garnered attention in Kalamazoo, Michigan, with the announcement of the Kalamazoo Promise program in November 2005. Other similar college scholarship programs, in which graduates from local high schools are guaranteed a full-tuition (and fees) scholarship at an in-state, public university or college for up to four years, have been developed across the country. The programs are typically funded by private donors and have few, if any, eligibility criteria beyond graduation from a public high school in the particular geographic area. While there is a small and growing literature on the academic effects of such programs, their impact on adolescent engagement in risky behaviors has yet to be explored. In this paper, we leverage the rollout of several Promise-type college scholarship programs to estimate their impact on juvenile crime and teenage childbearing in the affected county, using a triple-differences framework. We find evidence that program announcements decreased risky behaviors among youth in Promise-adopting counties, observing beneficial changes in arrest rate trends and suggestive evidence of declining teen birth rates over time after announcement. We also consider heterogeneity of effects by race and across the geographies implementing such programs.

Keep the Kids Inside? Juvenile Curfews and Urban Gun Violence (with Jillian Carr). Revise & resubmit, *Review of Economics and Statistics*.

First draft: August 2014. Current draft: September 2016.

Abstract: Gun violence is an important problem across the United States. However, the impact of government policies on the frequency and location of gunfire has been difficult to test due to limited data. The data that do exist suffer from broad and non-random underreporting. This paper uses a new, more accurate source of data on gunfire incidents to measure the effects of juvenile curfews in Washington, DC. Juvenile curfews are a common, but extremely controversial, policy used in cities across the United States. Their goal is to reduce violent crime by keeping would-be offenders and victims indoors, but removing bystanders and witnesses from the streets could reduce their deterrent effect on street crime. The net effect on public safety is therefore ambiguous. We use exogenous variation in the hours of the DC curfew to identify the policy's causal effect on gun violence. We find that, contrary to its goal of improving public safety, DC's juvenile curfew increases the number of gunfire incidents by 150% during marginal hours.

Media coverage includes: Marginal Revolution, Vox, FiveThirtyEight, Newsweek, Washington Post, Wall Street Journal, NewsRadio WINA

WORKS IN PROGRESS

Improving prisoner re-entry outcomes through large-scale behavioral interventions (with Ben Castleman)

High-Stakes Testing, Stress and Student Performance: Biological Pathways (with Emma Adam, David Figlio, Jennifer Heissel, and Jonathan Meer)

Safer Grounds: measuring the impacts of safety concerns on academic engagement (with Sophie Trawalter)

The impact of criminal databases on plea-bargaining (with Amanda Agan)

COLUMNS AND RESEARCH BRIEFS

Are Immigrants More Likely to Commit Crimes?, February 14, 2017, Econofact.org

Forget "ban the box" and give ex-prisoners employability certificates, December 15, 2016, *Real Clear Policy*. Also published by *Brookings*.

Does "Ban the Box" Help or Hurt Low-Skilled Workers?: Statistical Discrimination and Employment Outcomes when Criminal Histories are Hidden (with Benjamin Hansen), October 26, 2016, *Cato Research Briefs in Economic Policy*, Number 62.

How Hiding Criminal Records Hurts Black and Hispanic Men (with Benjamin Hansen), September 8, 2016, Time.

Are criminal risk assessment scores racist? (with Megan Stevenson), August 22, 2016, Brookings: Up Front.

DNA databases deter crime, without filling prisons, August 16, 2016, Real Clear Markets. Also published by Brookings.

To reduce wrongful convictions, reform the bail system, June 22, 2016, Inside Sources. Also published by Brookings.

The unintended consequences of 'Ban the Box', May 31, 2016, Real Clear Markets. Also published by Brookings.

Gun violence in major U.S. cities is massively underreported, April 27, 2016, Brookings blog.

Should we pay people not to commit crime? April 18, 2016, Inside Sources. Also published by Brookings and the Las Vegas Sun.

Keep the Kids Inside? Juvenile Curfews and Urban Gun Violence, March 16, 2016, Cato Research Briefs on Economic Policy, Number 47.

Want to reduce incarceration rates? Try targeted surveillance, March 15, 2016, Real Clear Markets. Also published by Brookings.

To reduce gun violence, empower citizens to make their communities safer, February 4, 2016, Inside Sources. Also published by Brookings.

Repealing juvenile curfew laws could make cities much safer, December 29, 2015, Real Clear Markets. Also published by Brookings.

Can technology fix the criminal justice system?, December 2015, Brookings Top Economic Stories of 2015

Fighting crime with Daylight Saving Time (with Nicholas J. Sanders), October 29, 2015, Brookings Now

The case for expanding the DNA database, February 7, 2015, Richmond Times-Dispatch

Race has a hand in determining market outcomes (with Luke C.D. Stein), July 2010, SIEPR Policy Brief

Race, discrimination, and iPods (with Luke C.D. Stein), June 2010, CEPR Vox

Research Grants

J-PAL North America. Co-Principal Investigator (with Ben Castleman): "Improving prisoner re-entry outcomes through large-scale behavioral interventions." $117,966. 2017-2019.

Koch Foundation. Co-Principal Investigator (with Ben Castleman): "Improving prisoner re-entry outcomes through large-scale behavioral interventions." $455,000. 2016-2019.

Bankard Fund for Political Economy, UVA. Principal Investigator: "Technology and Campus Sexual Assault Reporting: Evaluating Callisto." $30,000. 2016-2017.

Russell Sage Foundation. Co-Principal Investigator (with Robynn Cox, Benjamin Hansen, and Sarah Jacobson): "How Race Affects Perceptions of Criminality and Thereby Employment." $28,600. 2015-2017.

Bankard Fund for Political Economy, UVA. Principal Investigator: "Should we 'ban the box'? Race, criminality, and employment." $30,000. 2015-2016.

Spencer Foundation. Co-Principal Investigator (with Emma Adam and Jonathan Meer): "High Stakes Testing, Stress and Performance: Biological Pathways." $50,000. 2015.

Bankard Fund for Political Economy, UVA. Principal Investigator: "Property division laws and the long-run outcomes of divorce." $30,000. 2014-2015.

National Institute of Justice. Principal Investigator: "The Interactions and Impacts of State DNA Database Laws." $226,496. 2014-2016.

Bankard Fund for Political Economy, UVA. Principal Investigator: "Heterogeneous and Cross-State Effects of DNA Databases." $30,000; PI. 2013-2014.

VPGE Diversity Dissertation Research Opportunity Grant, Stanford University. 2010-2011.

John M. Olin Program in Law and Economics Research Grant, Stanford University. 2009-2010.

HONORS AND AWARDS

2013-2014 NBER/NSF Crime Research Fellowship
2011-2012 Hawley-Shoven Fellowship, Stanford University
2011 Summer Research Fellowship, John M. Olin Program in Law and Economics, Stanford
2010-2011 B.F. Haley and E.S. Shaw Fellowship for Economics, Stanford University
2010 Summer Research Fellowship, John M. Olin Program in Law and Economics, Stanford
2009-2012 Shultz Scholar, Stanford University
2006-2008 Graduate Fellowship, Stanford University

ACADEMIC CONFERENCE PRESENTATIONS AND INVITED SEMINARS

2017: American Economic Association Annual Meeting, American University, Universities of Waterloo & Western Ontario workshop on the economics of crime, Duke University, DC HELD Policy Day Conference (scheduled), SOLE annual meeting (scheduled), Western Economics Association Conference (scheduled), NBER Summer Institute Crime Working Group (scheduled), Southern Economics Association Conference (scheduled), UC Irvine (scheduled)

2016: University of Texas School of Law, Williams College, University of Illinois Urbana-Champaign, UPenn Law, American Enterprise Institute, University of Chicago Convening on Urban Data Science, AREUEA national conference, IRP Summer Research Workshop, Banff Empirical Micro Workshop, University of Chicago - Harris School, Conference on Empirical Legal Studies, Southern Economics Association Conference, University of Alabama – Birmingham

2015: UVA Law, Eastern Economics Association Conference, UVA Quantitative Collaborative, Midwest Economics Association Conference, Montana State University, IRP Summer Research Workshop, Conference on Empirical Legal Studies, APPAM Big Data Workshop, Southern Economics Association Conference

2014: National Institute of Justice, Eastern Economics Association Conference, Western Economics Association Conference, Georgetown Law

2013: American Economic Association Annual Meeting, Tulane University, Midwest Economics Association Conference, Texas A&M, Eastern Economics Association Conference, RAND, Western Economics Association Conference, IRP Summer Research Workshop, West Virginia University, American Society of Criminology Annual Meeting

2012: American Enterprise Institute, Harvard Kennedy School, Wellesley College, Joint Committee on Taxation, UVA Batten School, Notre Dame, Brookings Institution, NBER Summer Institute - Crime Working Group, U. Maryland School of Public Policy, UVA Economics, UVA Darden, UVA Law, William & Mary

2011: Eastern Economics Association Conference
2010: San Francisco Federal Reserve Applied Micro Summer Conference

POLICY PRESENTATIONS, PANELS, AND TESTIMONY

2017: Quora Session (scheduled)

"SIEPR Policy Forum on Crime, Policing, and Incarceration", Stanford University (scheduled)

"Increasing economic opportunity for people with criminal records", private discussion with Brookings Council, the Brookings Institution (scheduled)

March 15: Testimony to Massachusetts state legislature's Time Zone Commission about effect of Daylight Saving Time on criminal behavior

February 21-23: Online debate about "Ban the Box" policies, Urban Institute

January 7: "Mass incarceration and the Economy: The Criminal Justice System's Impact on Employment, Equality, and Growth", American Economic Association Annual Meeting — slides

2016: October 21: "Second Chances Through Successful Reentry", The Hamilton Project, Brookings Institution — event details and video

October 12: "The social value of forensic science", Forensic Science Managers Symposium, INTERPOL

2015: February 9: Meeting on "The Economics of Consumer Privacy Rights", The White House

2014: June 16: "Identity Intelligence" panelist at UVA Conference on National Defense and Intelligence

2013: November 6: "The effects of DNA databases on crime", 7th International DNA Users' Conference for Investigative Officers, INTERPOL

ACADEMIC SERVICE (UVA)

2016-17: Faculty Research Seminar Committee, "Targets of Opportunity" Search Committee, Junior Economics Workshop organizer
2015-16: (On leave)
2014-15: Admissions Committee, Batten Website Committee
2013-14: Economics Search Committee, Dean of the Batten School Search Committee, Undergraduate Capstone Committee, Graduate Curriculum Committee
2012-13: Economics Search Committee

ACADEMIC SERVICE (OTHER)

2017: Russell Sage Foundation Peer Reviewer
2016: ALEA Area Organizer (Criminal Law; Crime; Law Enforcement), NSF Peer Reviewer
2015: NSF Peer Reviewer
2014: NIJ Peer Reviewer

REFEREEING

American Economic Journal: Applied Economics (AEJ: Applied), Economics of Education Review, ILR Review, Journal of the European Economics Association (JEEA), Journal of Human Resources (JHR), Journal of Labor Economics (JOLE), Journal of Law and Economics (JLE), Journal of Policy Analysis and Management (JPAM), Journal of Public Economics (JPubEc), Labour Economics, Management Science, Review of Economics and Statistics (REStat), Southern Economics Journal, Quarterly Journal of Economics (QJE)

CONSULTING

ACLU of Illinois (March 2016 - present)

PAST POSITIONS

2005-2006	Assistant Analyst, Congressional Budget Office
2003-2005	Senior Research Assistant, The Brookings Institution